REMARKS/ARGUMENTS

Claims 1, 3 are amended, Claims 27-30 are added, and no claims are canceled. Hence, Claims 1-7, 9-20, and 22-30 are pending in the application.

The amendments to the claims as indicated herein do not add any new matter to this application. Furthermore, amendments made to the claims as indicated herein have been made to exclusively improve readability and clarity of the claims and not for the purpose of overcoming alleged prior art.

I.   SUMMARY OF THE TELEPHONE INTERVIEW

The Examiner is thanked for the telephone interview held on May 6, 2008. In the interview, the Examiner and his supervisor and Applicants' representatives discussed the invention according to Claim 1 and briefly discussed the differences between Claim 1 and the cited art. In particular, it was explained that *Agrawal* is a good example of the complexity of task of constructing database statements to identify frequent itemsets, in the absence of the invention recited in Claim 1. In contrast, using the novel function clearly defined and expressly claimed in Claim 1, the process of constructing database queries to identify frequent item sets is vastly simplified. No specific agreement was reached.

II.   SUMMARY OF THE REJECTIONS

Claims 1-2, 4-7, 12-15, 17-20 and 25-26 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,324,533 issued to Agrawal et al. ("*Agrawal*") in view of U.S. Publication No. 2002/0087561 to Chen et al. ("*Chen*"). This rejection is respectfully traversed.

Claims 3, 9-11, 16 and 22-24 stand rejected under 35 U.S.C. § 103(a) as allegedly being

unpatentable over *Agrawal* in view of *Chen*, and further in view of U.S. Patent No. 6,138,117

issued to Bayardo ("*Bayardo*"). This rejection is respectfully traversed.

III.   THE REJECTIONS BASED ON THE CITED ART

Claims 1-2, 4-7, 12-15, 17-20 and 25-26 stand rejected under 35 U.S.C. § 103(a) as

allegedly being unpatentable over *Agrawal* in view of *Chen*.

A.   CLAIM 1

Claim 1 recites:

> A method for performing a frequent itemset operation, the method comprising the steps of:
> within a database server that supports a particular database language, parsing a database statement to detect within the database statement, a construct that extends the particular language,
> wherein the construct identifies **a function that counts and returns frequent itemsets** given a cursor as input to the function;
> wherein the cursor is used by the function to access values from rows that are returned from a SELECT statement;
> wherein the function identifies said frequent itemsets based on said values from said rows returned by said SELECT statement;
> performing said frequent itemset operation as part of execution of the database statement to produce results; and
> storing the results in a computer-readable storage medium. (emphasis added)

As discussed in the interview, Applicants are <u>not</u> claiming to be the first inventors to count and

return frequent itemsets. Indeed, paragraphs 7-10 of the Background of the Invention section of

the specification concedes, in paragraphs 7 and 9, that frequent itemset operations were known.

The Background section further describes the state of the art that existed at the time the present

application was filed:

> Unfortunately, there is a limit to the type of operations that SQL directly supports. Operations that are not directly supported by SQL may be performed by specifying a series of SQL operations which, when executed in combination with each other, perform the desired unsupported operation.

Depending on the nature of the unsupported operation, the combination of SQL operations required to perform the unsupported operation may be quite complex. Further, amount of time and resources required to execute the series of operations may make the use of SQL impractical.

An example of a type of operation that, in general, cannot be performed efficiently using SQL operations is a frequent itemset operation.

When performed using available SQL operations, frequent itemset operations typically require, among other things, **so many join operations** that performance is frequently unacceptable when the operation involves any sizable item group population. (emphasis added)

Agrawal suffers the same problems identified in the Background of the Invention section. For example, FIGs. 4, 5, 8, 10, and 11 of *Agrawal* depict SQL queries that require numerous join operations and table function calls. Further, col. 6, line 61 to col. 7, line 61 teaches "a process for finding frequent itemsets." That process includes (a) candidate generation, which requires a pruning step, such as is depicted in FIG. 4, and (b) counting support to find frequent itemsets. The counting support is described in detail in col. 8 line 38 to col. 13, line 67 and depicted in FIGs. 8, 10, and 11. Counting support using SQL-92 shows the use of k-way joins, 3-way joins, subquery-based counting, and multiple group-bys. Counting support using SQL with OR extensions also teaches the use of k-way joins.

In contrast, with Claim 1, in order to count and return frequent itemsets, a user merely has to compose a single database statement that includes a single function, which takes a cursor as input. Fundamentally, *Agrawal* lacks any teaching or suggestion a single function that counts and returns frequent itemsets. None of the database statements disclosed in *Agrawal* includes a function that counts and returns frequent itemsets.

Based on the foregoing, *Agrawal* and *Chen* fail to teach or suggest, both individually and in combination, all the features of Claim 1. Therefore, Claim 1 is patentable over *Agrawal* and

Chen. Reconsideration and withdrawal of the rejection of Claim 1 under 35 U.S.C. § 103(a) is therefore respectfully requested.

B.   CLAIMS 2-7, 9-13, 27, AND 29

Claims 2-7, 9-17, 27, and 29 are dependent claims that depend (indirectly or directly) on Claim 1 discussed above. Therefore, each of Claims 2-7, 9-17, 27, and 29 includes the same features of Claim 1 discussed above. Each of Claims 2-7, 9-17, 27, and 29 is therefore patentable over *Agrawal* and *Chen* for at least the same reasons discussed above for Claim 1.

C.   CLAIMS 14-20, 22-26, 28, AND 30

Claims 14-20, 22-26, 28, and 30 are computer-readable storage medium claims that depend on one of the claims discussed above. Each of Claims 14-20, 22-26, 28, and 30 is therefore patentable over *Agrawal* and *Chen* for at least the same reasons discussed above for claim upon which it depends.

IV. CONCLUSION

For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Please charge any shortages or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,

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